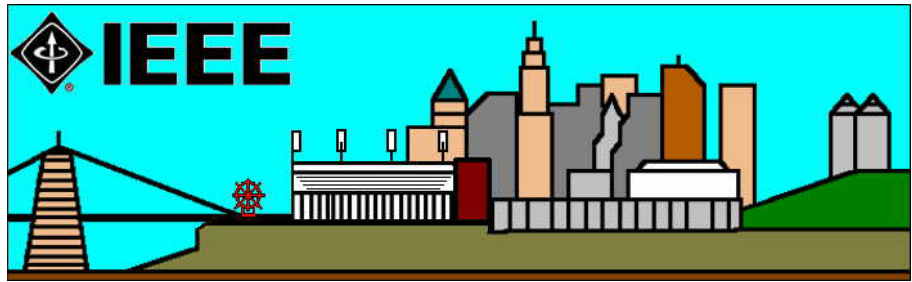


**IEEE CINCINNATI
SECTION
NEWSLETTER
SEPTEMBER 2003**



SEPTEMBER MEETING BLACKOUT OF 2003

DATE: Thursday, September 25, 2003

PLACE : Raffel's – 10160 Reading Road (see below for directions)

TIME : 5:30 p.m. to 7:00 p.m. - Social Time/Dinner
7:00 p.m. to 8:30 p.m. - Program

COST FOR DINNER: \$15.00 which includes a buffet dinner, soft drinks/coffee, tax & gratuity.
Cost for student members - \$10.00

MENU SELECTIONS: Country Fried Chicken, Spaghetti with Meatballs, Meatloaf served in Brown Gravy, Whipped Potatoes, Succotash, Caesar Salad, Fresh Fruit Salad, Buttermilk Biscuits, Apple Dumpling, Coffee, Tea Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks. Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately 3/4 of a mile to Reading Rd. and turn right on Reading.

Please call the Cincinnati Section Voice Mailbox at 513-629-9380, by **Noon, Tuesday, September 23, 2003** if you plan to attend. Please leave your **Name, IEEE Member Number,** and **a daytime telephone number.** You may also make a reservation by e-mailing our Arrangements Chair, **Charlie Nash,** at cnash@ieee.org.

ABOUT THE PRESENTATION: This month's meeting will feature a presentation by John Procario, Vice-President & Chief Operating Officer, Energy Delivery Business Unit of Cinergy. John will discuss the massive August 14, 2003 blackout which left 50 million people in eight states and two Canadian provinces without power. John will discuss the probable causes of the blackout, what is being done to correct these causes and prevent a re-occurrence, and what individuals can do in the event of a blackout.

ABOUT THE SPEAKER: Mr. Procario received a BS degree in electrical engineering and a MS degree from Ohio State University in 1973 and 1974. He has held various engineering and managerial positions with Cincinnati Gas & Electric beginning in 1974, including Manager of Electric Planning and Manager of Electric System Operations. After the merger of PSI Energy and CG&E to create Cinergy, he held various positions including General Manager of Electric System Operations, General Manager of Bulk Power Resource Management, Vice President of Electric System Operations, and Vice President of Electric Operations. He has also taught in the College of Engineering at the University of Cincinnati since 1975. Mr. Procario has participated in various industry organizations including the ECAR Executive Board, the NERC Engineering Committee, and the EPRI Electrical Systems Committee. He is also a member of IEEE and has held various positions in the Cincinnati Section.

CHAIR'S MESSAGE
by Fred Nadeau, Section Chair

I want to welcome the Cincinnati Section members to a new year of dinner programs and projects. I congratulate the efforts of our Executive Committee to establish a series of programs for you to enhance your knowledge in your fields of interest.

We are starting in September with the subject of the power blackouts which affected many Ohioans and much of the northeast this last month. Since over 240 members are interested in computer science subjects (based on a April 2001 survey of the section), we will strive to select several computer related topics this year. We are also launching a project to assist our members in locating jobs. Our web site will provide that service in the near future.

Fred Nadeau, Section Chair
E-mail: f.nadeau@ieee.org
Phone No. 937-289-2800

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

John M. Adipietro	Rebecca A. Hopkins	C. J. Park
Greg Adkins	Yan Jin	Gregory Parsons
Robert J. Backscheider	Frank R. Kile	Raj Raghavendran
Thomas H. Bengal	Steven J. Klatte	James R. Raymond
Andrew W. Boniface	Thomas N. Lee	Brian Reynolds
Zachary J. Bortolot	Breck S. Lewis	Bilal Rizvi
Matthew J. Brackett	Michael D. Lucey	John Rule
Mengmeng Ding	Rajasekhar Mamudur	James P. Sannon
Elwood Dunning III	Alfonso J. Marmora Jr.	Ella Strong
Matthew D. Flint	Chad R. Martin	Matthew Vanderhorst
Michael Greene	Robert McDowell	Jason J. Wilden
Daniel E. Hack	Debra S. McKee	David Wilkerson
Todd M. Hartman	Logan P. Miller	Philip A. Wilsey
Nina K. Hedrick	Pradeep K. Mohanty	Glenn A. Wolfe
Brad J. Hekler	Robert E. Morgan II	Yasuhiro Yamamoto
John M. Higgins	Tuan A. Nguyen	Jun Yan
Kevin N. Hill	Roberto M. Padilla	

We wish to welcome these new members to our Section!!!

University of Cincinnati Names Distinguished Alumni

The University of Cincinnati College of Engineering celebrated its annual Distinguished Alumni Awards Banquet at the Kingsgate Conference Center on April 11, 2003. Distinguished alumni recipients are chosen based on their exemplary achievements in engineering, business, public service, education or professional activities. Included in the 2003 recipients were Clyde Haehnle (EE '44) and Calvin Bopp (EE '42).



Clyde Haehnle



Calvin Bopp

They were included in a group of UC alumni and co-op students which was awarded the Distinguished Engineering Achievement Award for the design and development of the Voice of America transmitting facilities in Bethany, Ohio. The technical feats achieved by the group made Cincinnati world-famous because Hitler referred to the Voice of America as "the Cincinnati liars".

The Cincinnati Section of IEEE extends its congratulations to these individuals.

NEW !!!!

CINCINNATI SECTION WEB SITE - JOB/CAREER OPPORTUNITIES

The Cincinnati IEEE Website would like to provide a forum for its members who are searching for new job/career opportunities. Initially we will list small-large size companies in the greater Cincinnati area who are currently recruiting engineers. Local Companies can post skillsets, promote their business and work with IEEE to create an opportunity-rich marketplace for both employer and employee. IEEE members benefit by taking advantage of a new source of job leads from some non traditional employers.

Interested business's can contact Laurie Tappel at ltappel@ieee.org. Please provide a brief description of the work your business performs, address - phone and open positions.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

Reprinted with permission from the IEEE publication, "IEEE-USA News & Views" April 2002.

Carl Friedrich Gauss: 30 April 1777 - 23 February 1855

Born 225 years ago, on 30 April 1777, in Brunswick, Germany, Carl Friedrich Gauss was one of the greatest mathematicians of all time. Gauss' mathematics has benefited engineering enormously. But he also contributed directly to electrical science and electrical technology in important ways.

Among his mathematical contributions were the proof of the fundamental theorem of algebra, the presentation of a complete theory of complex numbers, and the development of potential theory (used in the study of gravitational and electromagnetic fields).

Gauss contributed greatly to the understanding of electricity and magnetism. He showed mathematically that electric flux through a closed surface is proportional to the enclosed charge (now known as Gauss' theorem). Together with physicist Wilhelm Eduard Weber, he studied terrestrial magnetism and electromagnetism. He devised a sensitive magnetometer, introducing the bifilar suspension of a magnetic needle used as an indicator (later adopted in galvanometers). Gauss devised a system of so-called absolute units, expressing force (and other quantities) using only the fundamental units of length, mass and time. In his honor, the unit of magnetic

induction has been designated the gauss, and treating a ship or other object so that it has no detectable external magnetic field is called degaussing.

In 1832, wishing to synchronize magnetic measurements carried out in two buildings a kilometer or two apart, Gauss and Weber built a two-wire circuit between the buildings and sent a time signal using a battery and a galvanometer. The next year they began sending words and sentences by this means. They tried to interest the army in the new signaling system, but failed. Not until 1837, did William Cooke and Charles Wheatstone patent their telegraph system in England. And, in the United States, Samuel Morse demonstrated his system, including his innovative way of coding messages.

*James E. Brittain
School of History , Technology, and Society
Georgia Institute of Technology*

Cincinnati Section Senior Membership Application Workshop

The Cincinnati Section of IEEE will sponsor a senior membership application workshop sometime in October 2003. A volunteer group of Cincinnati Section IEEE Senior Members and IEEE Fellows will be available to assist section members with application forms and references. Section members interested in elevating their current member status to Senior Member grade should consider attending the workshop. Arrangements for the workshop are being finalized by the Executive Committee. **INFORMATION ON THE WORKSHOP WILL BE PUT ON THE SECTION'S WEB PAGE (<http://ieee.cincinnati.fuse.net/>)** and notices will be sent to members by e-mail when plans are finalized. In the interim if you have questions concerning Senior Membership, please feel free to contact Jim Everly, Workshop Chairman, at j.everly@ieee.org.

The senior member grade is the highest IEEE membership grade that can be obtained by application. Often-cited reasons for applying include recognition of accomplishments by peers, professional advancement and personal satisfaction. Many section members qualify for advancement to the senior member grade much earlier than they realize.

In most sections, members are slow to apply because they are not aware of the requirements. It's worth noting that holding the senior member grade in IEEE does not imply being at the age level of a "senior citizen." Mid-career or earlier is an appropriate time for a member to apply for an upgrade.

Members who have as few as 10 total years of professional experience, with five or more of those years as significant performance, can meet the minimum requirements for the senior member grade. Applications are reviewed by panels of the Admission and Advancement Committee in regional meetings held 10 times each year.

The 10-year minimum requirement for professional experience can include three years for an applicable bachelor's degree, one year for a master's, and another one for a Ph.D. The panels look closely at the documentation on the five years of significant experience. It is suggested that applicants attach a résumé to aid the panel. Asking for more than the required three senior members or fellows to complete the confidential reference form is also a good idea, since the application can be considered as soon as the first three are received.

For more information on IEEE senior member grade or to receive a senior member application kit, send an e-mail request to "application-request@ieee.org" or contact the IEEE by phone at 800-678-4333.

LOOKING FOR A JOB? LOOKING TO FILL A POSITION?

If you are an IEEE Member who is trying to find employment, either because of a desire for a change of scenery or due to circumstances beyond your control, the IEEE Job Site may be what you are looking for. Go to <http://careers.ieee.org>. There you can register and profile your ideal job. Use the IEEE Job Site to create a

profile of your ideal job and update it anytime. Jobs matching the profile can be viewed immediately, or automatically sent via email. You choose how much of your identity and information to give to an employer. Sign up and be prequalified for an interview within minutes.

If you are an Employer looking to fill a vacant position, you can post jobs, search resumes and prescreen candidates, all of whom are prequalified, highly skilled IEEE Members, using the IEEE Job Site. You may place banner ads on this site, or classified and display advertising in premium IEEE print publications. Let IEEE's unique "smart job" technology in the IEEE Job Site find you the best candidates faster and reduce your time-to-hire and recruitment costs!

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engineering careers in aerospace

Thursday, 4 September 2003

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- Create/Update a Profile
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For Employers

- Register & Post Jobs
- Rates & Packages

Tech Papers

Electrical, electronics, computer and other electrotechnology and information-technology professionals! Find your next great job through the IEEE Job Site! Search the job listings by technical area, title and location and find the next rung on your career ladder.

Any technology professional can search the Job Site listings, but you must be an IEEE member to take full advantage of this online recruitment service. Not a member? [Join today!](#)

IEEE Members

Register and profile your ideal job today! Use the **IEEE Job Site** to create a profile of your ideal job and update it anytime. Jobs matching the profile can be viewed immediately, or automatically sent via email. You choose how much of your identity and information to give to an employer. Sign up and be prequalified for an interview within minutes!

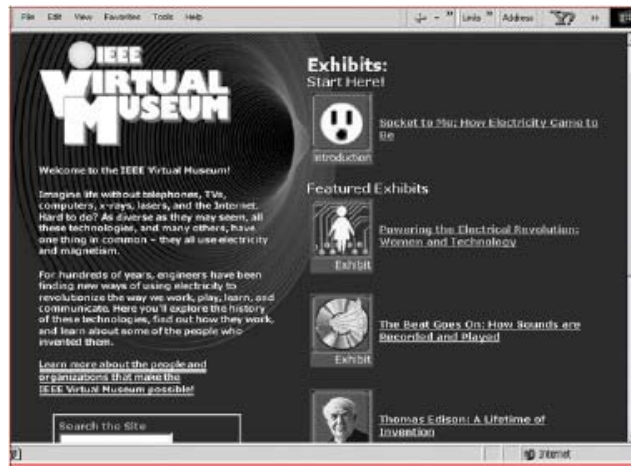
Employers

Post jobs, search resumes and prescreen candidates, all of whom are prequalified, highly skilled IEEE Members, using the **IEEE Job Site**. Place banner ads on this site, or classified and display advertising in premium IEEE print publications. Let IEEE's unique "smart job" technology in the **IEEE Job Site** find you the best candidates faster and reduce your time-

IEEE VIRTUAL MUSEUM CELEBRATES ONE-YEAR ANNIVERSARY

From The IEEE History Center, Newsletter No. 61, March 2003.

This February marks the one-year anniversary of the launch of the IEEE Virtual Museum (<http://www.ieee.org/museum>). The IEEE VM was conceived of as a site that would enhance the public's understanding of the technologies that underpin modern society and which would place those technologies into social and humanistic contexts. In the past year we have made great inroads into achieving this goal. Currently the IEEE VM contains about 300 unique pages, which are organized into four exhibits. These pages cover such diverse topics as explaining how a television picture tube works to examining the life of a 19th century telegraph operator. As one journalist wrote, the IEEE Virtual Museum may be the only place on the Internet to highlight both Thomas Edison, and the singing cartoon characters, "Alvin and the Chipmunks."



IEEE Virtual Museum web site

Although we knew we were onto a unique idea, the success of the VM surprised even us. Within a year we were chosen by the Internet Scout Project to be part of their Scout Report, one of the Internet's longest-running weekly publications. The Scout Report offers "a selection of new and newly discovered online resources of interest to researchers, educators, and anyone else with an interest in high-quality online material." This honor was followed by being chosen as a SciLink by the National Science Teachers Association (NSTA). In addition, the VM is a link on many other education-oriented websites such as that of the International Technology Education Association (ITEA) and the UK's Spartacus Educational. Finally, there is hard proof in our user numbers. Upon the first week of launch in February 2002 we had several hundred Web "sessions." In the last months of 2002 we've been averaging about 15,000 sessions per week.

As we move into our second year of activity we hope to continue growing the IEEE VM despite a hostile economic climate. This expansion includes adding more features and more exhibits, as well as creating more materials for use by educators. The first major IEEE VM enhancement in 2003 will be the launch of our newest exhibit, Microwaves: From Your Kitchen to the Edges of the Universe, which will go live in the first quarter. In the meantime, we'd like to take a moment at this one-year milestone to thank all the people and organizations that made the IEEE Virtual Museum possible. These include the Trustees of the IEEE History Center, the IEEE History Committee, the IEEE Foundation, the IEEE Life Members Committee, the IEEE Microwave Theory and Techniques Society, The Charles Edison Fund, and Mr. Lawrence Crooks. Finally, we thank all the visitors to the IEEE VM for their enthusiasm and support.

TO SUBSCRIBE TO THE ELECTRONIC NEWSLETTER

This newsletter is only available via e-mail or the Section's web page at <http://ieee.cincinnati.fuse.net/> with the exception of new Section members (one issue only) or members who have specifically requested a copy be delivered through the U. S. Mail.

If you are a new Section member and would like to get this newsletter electronically, please contact Bob Morrison (Editor) at **513-287-3697** or by e-mail at j.r.morrison@ieee.org. Provide your name and member number. In case there are questions, please include a daytime telephone number as well.

If you would like the "Snail Mail" version, you must contact Bob Morrison via the above means or call the Section's voice mail at **513-629-9380**.

IEEE NEWS

IEEE Job Site Provides Free Job Postings

In 2003, the IEEE Job Site has a valuable new revenue share program for IEEE Sections. Your Section can receive a ten percent commission from the job posting fees of companies, which you refer to the Job Site. Single job posts cost \$175 for 30 days and multiple post contracts start at \$570 for four postings annually.

Local members can assist their Section by enrolling their recruitment managers for a free job posting at <http://www.spectrum.ieee.org/jobsite/hrmanagerform/>. This form requires that a member indicate their local Section so that the referral can be tracked for revenue share purposes. Recruitment managers referred by members will be contacted by Job Site staff to place their free posting and to determine whether they wish to pay for additional online job ads.

Each participating Section receives a quarterly revenue activity report and their revenue share commission is paid annually. For further details, please contact Mike Buryk, Job Site business development manager, at 1-212-419-7571, or m.buryk@ieee.org.

To view and/or download a slide presentation on the Job Site revenue share program, go to the IEEE Section Chapter Support Volunteer Forum virtual community at https://www.ieeecommunities.org/section-chapter_vol. Select "Lists" from the menu on the left of the screen. Other presentations will become available at this location as well. Sign up for daily, weekly or monthly emailed updates to the virtual community.

First time visitors to the site, you will need to sign up by doing the following:

1. Click on "Join".
2. Choose "Option A: Create a new account".
3. Complete all fields marked with a red asterisk.
4. Read the Terms of Service and check the box to indicate agreement.
5. Click the "Join Now" box.

If you have questions about the IEEE Section-Chapter Volunteer Forum, contact Denise Maestri at 1-732-562 - 5505 or d.maestri@ieee.org.

Copies of "Stolen Jobs" Series Available Free to IEEE Leaders and Media

WASHINGTON (May 27, 2003) - If you're a policy maker or an investigative reporter, you've got to see "Stolen Jobs."

Produced by WKMG-TV, Local 6, in Orlando, Fla., "Stolen Jobs" provides an in-depth look at how some employers take advantage of loopholes in the nation's immigration laws to replace U.S. engineers and computer scientists with cheaper foreign workers on H-1B and L-1 visas.

IEEE-USA, with permission from WKMG, reproduced the series onto CD and is making it available free to IEEE leaders and media sources. Please contact Helen Hall at h.hall@ieee.org or 202-785-0017 for your CD. All 535 members of Congress will also receive a copy.

WKMG Investigative Reporter Steven Cooper interviewed affected workers, industry representatives, Sen. Bill Nelson (D-Fla.) and Rep. John Mica (R-Fla.) for "Stolen Jobs," which aired in February and was updated on 20 May.

"The more we investigated, the more alarmed we became," Cooper said. "How had this been happening to the American worker? And why didn't anyone know about it? We felt obligated to share this information with the

public. If this story raised the awareness of some Americans, forced elected officials to reconsider this issue, or simply gave the displaced worker a venue to be heard, then we are deeply gratified to have pursued it to the extent we did."

Teen Wins IEEE Presidents' Scholarship with Power Engineering Project

By Lynn Murison

Generating energy by pulsing mercury through a copper coil won 16-year old senior Elizabeth Van Cortlandt Varela from Alexandria, VA, USA the US\$10,000 IEEE Presidents' Scholarship. The award was presented by IEEE President-elect Arthur Winston on 15 May at the Special Awards Ceremony at the Intel International Science and Engineering Fair (ISEF) in Cleveland, Ohio.

The annual scholarship sponsored by the IEEE Foundation is the largest award presented by an organization at the Intel ISEF Special Awards Ceremony. As is customary each year, the "host" section also presents awards. The IEEE Cleveland Section presented two awards, for US\$750 and US\$250. Ray Heintel, Lead Judge for the Scholarship, fielded a panel of seven. In one long day, they sorted through the initial 1100 projects from over 35 nations, before choosing a project "for outstanding achievement in creating a project that demonstrates an understanding of electrical engineering, information technology, or other IEEE fields of interest."

Heintel called Varela's project, "one that has the ability to improve the generation of energy in a little studied area and which could benefit power engineering."

Varela's "A Magneto Hydrodynamic Direct Current Transformer: is a machine that can generate energy when a DC to AC alternator is not wanted and when DC sources (i.e.: battery, fuel cell) are necessary. Magneto Hydrodynamic (MHD) can be very useful where there are high mechanical costs, such as with turbines in electrical generators. Because it uses liquid metal alloys that are highly conductive, MHD could lead to improved conservation of natural resources, reduced thermal pollution, and lower fuel costs.

"What was impressive," IEEE President-elect Winston said about Varela's project, "was that she practiced engineering and actually built the equipment using a MHD transformer."

Varela's transformer involved use of an innovative "accumulator" to cut the circuit through the mercury coil and allow the use of coils and electrodes in series. She went through three distinct design phases, eventually using an auto fuel injector pump. Her transformer is made up of two coils, one of copper wire windings, and the other of mercury-filled tubing, both wrapped about the same iron core.

In the true spirit of investigation, Varela was working on a totally different project, 2 1/2 years ago, when she noticed anomalies appearing in part of her research. "I found that these strange things I was seeing were due to MHD, about which I could find very little. I turned to the Internet for my research," she said. Little by little she found MHD so fascinating that she started to build her transformer in order to learn more about MHD. Although she found two researchers, one in Israel and the other in Latvia, to correspond with, she had no direct mentor for her project.

This fall Varela will be a freshman majoring in physics at Duke University in Durham, NC, USA. One of the reasons she chose Duke was that freshman can begin conducting their own research immediately, so she can keep working to improve the efficiencies on her MHD direct current transformer. She also won the United Technologies Corporation top award: 30 shares of UTC stock; Schlumberger Excellence in Educational Development award, for \$1,000.00; a trip to meet top Schlumberger scientists, and an internship; NASA top award, an all expense-paid trip to U.S. Space Camp in Huntsville, Alabama; INTEL Engineering Category awards: 4th place Grand Award, for \$500.

IEEE-USA Supports Reverse Engineering in Brief before U.S. Supreme Court

WASHINGTON (June 4, 2003) - IEEE-USA filed an amicus curiae brief Monday before the U.S. Supreme Court in support of reverse engineering in the Baystate Technologies, Inc., vs. Howard L. Bowers (No. 02-1585) copyright case.

In its brief, IEEE-USA stated that the Federal Circuit's decision in *Bowers vs. Baystate Technologies, Inc.*, 320 F.3d 1317 (Fed. Cir. 2003) "creates substantial uncertainty as to whether copyright holders can unilaterally prohibit the long-standing, widely accepted and essential practice of reverse engineering." The brief asks the Court to review the lower court decision in that light.

Glenn Tenney, chair of the IEEE-USA Intellectual Property Committee (IPC), said the protection of reverse engineering is of great importance.

"The U.S. economy and our competitiveness internationally hinges upon the careful and closely negotiated balance that Congress built into federal intellectual property law," Tenney said. "It would be dangerous to allow software publishers to repeal the Copyright Act with a shrink wrap, simply because they don't like that balance. We sincerely hope that the Court will take up this important case."

Reverse engineering is a common and recognized practice, particularly in computer software, and is extremely important to technological advancement. IEEE-USA defines reverse engineering as "the discovery by engineering techniques of the underlying ideas and principles that govern how a machine, computer program or other technological device works." (IEEE-USA 1997 Position Statement: <http://www.ieeeusa.org/forum/positions/reverse.html>).

According to the IEEE-USA brief, "many persons engage in reverse engineering to gain ideas about how to create competitive or complementary products."

A copy of the brief, which was coordinated by IEEE-USA's IPC, and other relevant resources are available at <http://www.ieeeusa.org/forum/policy/2003/Baystate060203.html>.

Andrew Greenberg and Matthew Conigliaro of Carlton Fields, P.A. of Tampa (www.carltonfields.com), prepared the brief pro bono for IEEE-USA, which was joined by the American Library Association, American Association of Law Libraries, and the Association of Research Libraries. Jonathan Band of Morrison & Foerster, LLP of Washington, D.C., (<http://www.mofo.com/index.cfm>), represented the library associations.

IEEE-USA TODAY'S ENGINEER Advises "How to Cope With Fear in Finding a Job in Today's Economy"

WASHINGTON (June 11, 2003) - "Despite the current economy and dim employment outlook, it is possible to land a great engineering job," writes Jennifer Hartranft in an IEEE-USA TODAY'S ENGINEER feature article on "Finding a Job in an Unstable Economy: Coping with Fear." In the current issue of the monthly webzine, Ms. Hartranft points out: "It may seem as though there are more engineers than job openings. But if you look at the big picture in staffing, it's a great time to be an engineer."

Hartranft's feature is one of several engineering employment and technology policy-related articles in the May TODAY'S ENGINEER, with tips, strategy and solutions for your career. To see the current issue, go to <http://www.todaysengineer.org>.

Other articles include:

Book Review: 'Good to Great: Why Some Companies Make the Leap and Others Don't

In his new book, Jim Collins and his research team examined 1,435 companies to analyze the practices that have helped 11 of those companies make the transition from good to sustainable outstanding performance. Collins in-depth, five-year study is described in this book review.

"Dual-Career Ladders: Rewarding & Maintaining Technical Excellence"

In this article, IEEE-USA's Professional Activities Editor Brian Skelton writes: "Organizations that have embraced the dual-career ladder (DCL) concept have made wise business decisions. Rather than promoting good engineers out of engineering, companies now use DCLs to offer engineer salary levels that are comparable to those of management while keeping the engineers in their valuable technical capacities." Skelton also covers the downside and challenges of DCLs.

"National ID System: Will We Trade Privacy For Security?"

Here, IEEE-USA's Editor-at-Large Terry Malkinson observes: "To be sure, citizens have dealt with identity confirmation for years. But as security measures continue to tighten and identification rules expand, many people in the United States have joined in the movement to create a national system to verify citizens' and visitors' identities."

To subscribe to the IEEE-USA TODAY'S ENGINEER e-mail update, go to: <http://www.todaysengineer.org/emailupdates/index.html>.

IEEE-USA TODAY'S ENGINEER Says "If the Job Fits..."

WASHINGTON (June 27, 2003) - At IEEE-USA's Professional Development Conference held this spring in Seattle, Washington, Keynote Speaker Sam Johnson said "job fit is the key to technical excellence" in any organization. As quoted further in the current issue of IEEE-USA TODAY'S ENGINEER, the monthly webzine, Johnson states: While the organization and the individual are jointly responsible for career growth, ultimately it is the employee who is accountable." Read on to see how you can determine whether you're experiencing learning curve struggles or a poor job fit.

The Johnson feature is one of several engineering employment and technology policy-related articles in the June 2003 TODAY'S ENGINEER, with tips, strategies and solutions for your career. To read the current issue, go to <http://www.todaysengineer.org>.

Other articles include:

High Noon for H-1B Visas

In this article, IEEE-USA's Technology Policy Editor George McClure writes that, on 1 October, the 195,000 temporary visa quota that has been in effect for the past three years will revert to the original level of 65,000 visas per year. McClure asks: Will lowering the visa quota have an effect on the current job market and the unemployment rate?

Using Trademarks to Guard Against Software Piracy

Here, Michael Lechter, Esq., provides some in-depth knowledge about trademarks. Lechter observes that a trademark is anything that identifies the source (i.e., origin) of a product or service or that signifies sponsorship or approval of the goods. He adds that while trademarks don't replace other forms of software protection, they can protect against both piracy and incidental copying.

Also, in this month's TODAY'S ENGINEER are articles on: "The Global Engineer: Succeeding Without Boundaries"; and "Technologists Still Watching Effects of Medicare Decision on Alternative Communication Devices."

To subscribe to the IEEE-USA TODAY'S ENGINEER e-mail update, go to: <http://www.todaysengineer.org/emailupdates/index.html>.

Competing With The \$800 a Month (or less) Engineer

By Paul Kostek, 2003 Chair of the American Association of Engineering Societies and a past president of IEEE-USA

We hear plenty about the positive impact globalization is having on the marketplace. Unfortunately for many engineers and other high-tech professionals, the impact has been devastating.

Engineering jobs in all sectors of the economy are being contracted out and moved outside the United States at an alarming rate. By 2015, 3.3 million white-collar jobs - including more than 472,000 in information technology and mathematics - are expected to move to low-cost countries, according to Forrester Research Inc. analyst John C. McCarthy. The predicted loss in wages is a staggering \$136 billion. The loss to the U.S. economy is far greater.

To take advantage of much lower salaries in other parts of the world, major corporations are already building overseas design centers. For the CEO under pressure to improve the corporate bottom line, the economics are hard to beat. You can hire a skilled non-U.S. engineer for about \$800 a month, about what many U.S. engineering grads earn per week. The \$5,000-a-year software programmer is another global reality.

Business Week magazine recently reported that for \$650 a month you can employ an aerospace engineer in Russia with a master's degree in math or aeronautics. His U.S. counterpart makes about \$6,000 a month.

So how do U.S. engineers compete in this new global marketplace? The answer has profound implications for the future of technical innovation in the United States, which sustains our nation's economic competitiveness, national security and overall standard of living.

Obviously U.S. engineers won't be able to compete on price by accepting salaries that are below U.S. poverty levels, leaving superior skills and proximity as their best hopes for maintaining a competitive edge. But even if the U.S. engineer enjoys a skills edge, how can an employer not take advantage of the increased productivity inherent in a salary differential that allows hiring 5-10 engineers overseas for the price of one here?

Is it an advantage for engineering functions to be performed close to the company site or in the same time zone? Many argue that companies prefer to keep their engineering design jobs close at hand in order to safeguard the company's intellectual property. But the offshore outsourcing trend clearly encompasses engineering design services. And what is proximate to the large global or virtual corporation that engages in 24-hour-a-day operations by moving work from time zone to time zone?

While jobs are being sent overseas, news on the home front is also discouraging. The unemployment rate for electrical engineers rose to an unprecedented 7.0 percent in the first quarter of 2003, according to the U.S. Department of Labor, Bureau of Labor Statistics, and stood at 6.4 percent for the second quarter. The most recent report also showed a 7.5 percent unemployment rate for computer programmers, 5.7 percent for computer hardware engineers and 5.6 percent for computer scientists and systems analysts. The rate for all workers was 5.6 percent.

Despite this record-high engineering unemployment, industry continues to defend increased outsourcing and the use of guest labor (such as H-1B and L-1 visa workers) by arguing that not enough U.S. students are entering engineering programs or pursuing technical careers. Government is starting to join the chorus as the large Cold War generation of government engineers reaches retirement age. But if all an engineering career can promise is job insecurity and low pay on one hand, or red tape and a government salary on the other, why would America's best and brightest choose engineering as a career path?

Lacking a clear edge in price, skills or proximity, what is the future for U.S. engineers? Do we just need to abandon certain areas and fields of engineering in the same way that the U.S. said good-bye to textiles and steel in the name of free trade?

Will job opportunities be limited to government-related work or infrastructure-related industries such as electric power generation and transmission, or phone service where U.S. citizenship or proximity is imperative?

As an engineer who has had to reinvent myself a dozen times during a 24-year career in order to stay competitive, I have to ask myself if an overseas competitor in Belarus, Beijing or Bangalore possesses the same skills that I do, and if proximity isn't important, and if they'll work for \$800 a month, then why hire me at \$8,000 a month? It's a question that is increasingly hard to answer. For the next generation considering a career in engineering, it will be even harder.

Paul Kostek is the 2003 Chair of the American Association of Engineering Societies and a past president of The Institute of Electrical and Electronics Engineers - United States of America (IEEE-USA). The views expressed here are his own.

President's Column, July/August 2003

*Jim V. Leonard, P.E.
2003 IEEE-USA President*



IEEE-USA, created 30 years ago to promote the career and public-policy interests of the IEEE's U.S. members, is an organizational unit of the IEEE. I'd like to highlight some of our professional activities on behalf of the IEEE's 235,000 U.S. members.

Volunteer leaders serving on the IEEE-USA Board of Directors and committees work closely with IEEE-USA staff to represent what we feel are the best interests of our U.S. members. We know that with such a large and diverse membership, we can't please everyone. But we hope the majority agrees with our positions and the direction we seek to lead the organization.

IEEE-USA's position statements are passed by our Board of Directors and serve as the basis for our lobbying and public-relations efforts. IEEE-USA also acts as an adviser to Congress. For example, we led a technological

and legislative briefing on nanotechnology for congressional staffers on Capitol Hill in June. Our volunteers visit Washington, D.C., and home-district congressional offices, and invite you to join us.

Last year we submitted an amicus curiae brief before the Supreme Court that served as the basis of its ruling in a landmark patent rights case. This year we filed another brief before the high court in support of reverse engineering.

IEEE-USA promotes engineering awareness and public understanding by actively participating in National Engineers Week each February. Next year we will spearhead IEEE's role as lead society, and will increase Future City Competition participation by sponsoring three additional teams' trips to Washington for the national finals.

In the career-enhancement area, we'll soon present the findings of our latest salary survey. With our most respondents ever, we believe the data is the best collected and analyzed. It serves as the basis of the new IEEE-USA Salary Database. We're also offer online leadership courses for the first time. For more information, visit our careers page at <http://www.ieeeusa.org/careers/>.

The depth of IEEE-USA activities cannot be summarized in this short space, so I recommend you visit our homepage at <http://www.ieeeusa.org/>. I also encourage you to vote in the upcoming IEEE elections. The ballots include some very capable candidates for IEEE-USA offices of President-Elect and Member-at-Large.

EE Unemployment Rate Drops Slightly Still Ranks Above Other Professionals

WASHINGTON (July 11, 2003) - The unemployment rate for U.S. electrical and electronics engineers (EEs) dropped in the second quarter, but remains well above the rate for other high-tech professionals, according to data compiled by the Department of Labor, Bureau of Labor Statistics (BLS).

After climbing to an unprecedented 7.0 percent in the first quarter, the EE jobless rate fell to 6.4 percent, still more than twice the rate for all managers and professionals (3.1). Mechanical engineers were unemployed at a rate at 3.1 percent, civil engineers at 3.9 percent and industrial engineers at 5.9 percent.

"The data suggests the EE unemployment rate went down because new jobs were added, not because of a reduction in the unemployed EE population," IEEE-USA President-Elect John Steadman said. "Just who these new jobs are going to is not clear, although we're concerned that many of them are being filled by temporary guest workers."

The BLS report showed that 17,000 more EEs were employed in the second quarter vs. the first (386,000 vs. 369,000), but that the number of jobless EEs held steady at 28,000. At 6.4 percent EE joblessness, the rate is more than six times as high as it was in 1997 (1.0), and more than four times as great as 2000 (1.2).

The second-quarter unemployment rate for all workers was 5.6 percent. The number of U.S. workers claiming jobless benefits in late June reached its highest point since February 1983, the Labor Department said.

While the jobless rate fell from 7.5 percent to 4.1 percent for computer software engineers and from 6.5 percent to 5.7 percent for computer hardware engineers, it rose from 6.7 percent to 7.5 percent for computer programmers. Computer scientists and systems analysts also saw an increase in unemployment from 4.9 percent to 5.6 percent. Despite the percentage drop for computer software engineers, 36,000 jobs were lost in that occupational category.

**500,000 U.S. IT Jobs Projected to Move Overseas by Year-end 2004;
IEEE-USA Sees Continued Loss in U.S. Economic Competitiveness, National Security**

WASHINGTON (July 21, 2003) - One-half million jobs, or 10 percent of the U.S. information technology (IT) professionals currently working in IT services firms, will be displaced in the next 18 months as their jobs move overseas, according to Gartner, Inc., the Stamford, Conn.-based research firm. The Gartner projection, in a 15 July research note by Diane Morello, would bring total IT job losses to one million, when added to the 500,000 IT professionals estimated by the Bureau of Labor Statistics to have lost their jobs in the U.S. since 2001.

In addition, Gartner urged business executives not to "trivialize" the impact of offshore outsourcing on their businesses and employees, stating that executives should pay attention to the loss of future talent and intellectual assets, as well as the potential negative impact of outsourcing on organizational performance.

Commenting on the projection of U.S. IT job losses, IEEE-USA President-Elect John Steadman said: "In the rush to cut costs through offshore outsourcing and increased use of guest workers, companies are undermining the U.S. IT profession and are increasing the vulnerability of their core competencies and knowledge base."

Dr. Steadman, who will become IEEE-USA's president in 2004, added: "The emphasis on outsourcing to cut costs may help boost quarterly earnings, but it is also putting our nation's long-term economic competitiveness and national security at risk as we give up our technology edge for short-term profits."

IEEE-USA leaders are also concerned about increased industry reliance on non-immigrant high-tech guest workers resulting in more offshore outsourcing.

According to IEEE-USA R&D Policy Committee chair Ron Hira, "Many high-tech guest workers are brought here specifically to facilitate offshore outsourcing arrangements." Dr. Hira added: "Other guest workers are taking the acquired knowledge of U.S. technology and business practices home with them, combining that know-how with low labor costs to help foreign businesses compete more effectively with U.S. companies."

IEEE-USA Publication Honored with Fifth APEX Award

WASHINGTON (July 31, 2003) - Communications Concepts, Inc. has honored IEEE-USA NEWS & VIEWS with an APEX Award for Publication Excellence in the Most Improved Newsletters category for its March 2003 issue, in APEX's 15th Annual Awards for Publications Excellence. With this fifth APEX Award, IEEE-USA publications have won 14 industry awards since 1996, including two International Association of Business Communicators (IABC) Silver Inkwell Awards of Excellence, in 2001 and 1997; and a Society of National Association Publishers (SNAP) Silver Excel Award, in 1999.

NEWS & VIEWS is IEEE-USA's quarterly "magapaper" for building careers and shaping public policy, included in the polybag sent to all U.S. IEEE members with IEEE SPECTRUM.

Communications Concepts, Inc., helps publishing, public relations and marketing professionals improve their publications through a variety of service offerings. APEX Awards are based on excellence in graphic design, editorial content, and the ability to achieve overall communications excellence.

APEX's 2003 panel of judges included John De Lellis, Editor & Publisher of Communications Concepts; Christine Turner, Contributing Editor to Writing That Works; and Dr. Paul Fisher, Communications Concepts Senior Evaluator, and former Professor of Journalism with the University of Missouri School of Journalism.

IEEE-USA's Call for Reliability Legislation Underscored by Largest U.S. Power Outage

WASHINGTON (August 15, 2003) - The latest major power blackout, affecting 50 million people in the northeastern United States and parts of the Midwest and Canada, underscores the urgent need for Congress to enact stronger electricity reliability standards for utilities.

"If left uncorrected, the decline in the quality and reliability of electric power will continue to imperil the lives of our citizens and seriously impact the nation's economy," IEEE-USA President Jim Leonard said. "Reliability of the electric grid needs to be the first and foremost consideration in any national energy policy. To restore reliability to its proper place at center stage in the market, Congress must pass legislation creating an organization empowered to develop mandatory and enforceable reliability standards."

IEEE-USA supports legislation empowering the Federal Energy Regulatory Commission to create a self-regulating reliability organization, the Electric Reliability Organization (ERO). The ERO will give the North American Electric Reliability Council (NERC) the necessary legislative authority to assure the reliability of the complete North American electric system, including elements in Canada and Mexico. NERC is a successful, voluntary, industry-created organization whose mission is to ensure that the bulk electric system in North America is reliable, adequate and secure.

Both the House and the Senate have passed legislation that will help accomplish this as part of their respective comprehensive energy policy packages. IEEE-USA strongly urges both houses to act quickly to resolve remaining differences between the two bills and pass an energy bill with strong reliability provisions intact.

For more information on electricity reliability and communications from the IEEE-USA Energy Policy Committee, go [to http://www.ieeeusa.org/forum/blackout.asp](http://www.ieeeusa.org/forum/blackout.asp).

Electric power reliability problems have led to more blackouts in recent years than historically experienced in North America. Customers in 14 western states underwent scattered outages twice in the summer of 1996. Major outages occurred during the summer of 1999 in different regions of North America, including Chicago and New York. More recently, California experienced rotating blackouts, price spikes and near bankruptcy of several utilities starting in mid-2000 and continuing into 2001. For more background on major power disruptions, see <http://www.nerc.com/BlackoutTable.pdf>.

IEEE-USA TODAY'S ENGINEER

The August 2003 issue of IEEE-USA TODAY'S ENGINEER is now live on the web. In this issue:

"Backscatter: Taking a Look Inside Peer Review" - To the neophyte, peer review might seem a jungle; to others, it's a familiar hurdle to overcome in the quest to get papers published. How does it work; who's involved; and how will you know whether or not your peers judged your work fairly? <http://www.todaysengineer.org/aug03/backscatter.asp>

"Prepare for the Future ? Generate Wealth" - Wealth generates money, but it's much more than what we think of as physical assets. By focusing on the future instead of the "here and now," companies and professionals can create the wealth necessary to bring in the revenues. Find out how in the latest edition of IEEE-USA Today's Engineer. <http://www.todaysengineer.org/aug03/prepare.asp>

"Engineering Degrees Can Be 'Steppingstones' to Other Professions" - Whether you are an engineer who is concerned about the faded employment picture, or one who has simply decided engineering is not for you, your

degree and skills need not go to waste. Many engineers have shifted their career directions dramatically and successfully. The possibilities are many. <http://www.todaysengineer.org/aug03/steppingstones.asp>

"Lifelong Learning Is Necessary for Career Success, According to Survey" - IEEE-USA Today's Engineer ran a survey earlier this year to determine engineers' opinions of and preferences for continuing education. Find out what the respondents had to say. <http://www.todaysengineer.org/aug03/lifelong.asp>

"Book Review: Smart Globalization" - Smart globalization captures the benefits of globalization while minimizing its costs and risks. This book features articles on designing winning global strategies and building and managing the global network. <http://www.todaysengineer.org/aug03/review.asp>

"H-1B and L-1 Visas Accelerate Offshore Outsourcing" - According to IEEE-USA testimony presented on Capitol Hill in June, the presence of guest workers in the United States on H1-B and L-1 visas has accelerated the incidence of outsourcing high-tech work and jobs. Hearing participants discussed whether the nation could continue to lose such white-collar jobs to offshore competition and still prosper. <http://www.todaysengineer.org/aug03/accelerate.asp>

"Technology Taking a Lead Role in U.S. Security" - While The Patriot Act and other laws enacted to secure our nation have garnered their fair share of criticism, they all acknowledge the role technology will play in tightening up security in the United States. Biometrics and x-ray technology will lead the effort, while other systems are poised for future implementation. <http://www.todaysengineer.org/aug03/tech-security.asp>

"No Funeral for Amtrak" - While still faced with a funding crisis, Amtrak keeps rolling along. Can the national rail system generate a profit? What changes may be in store in the near future and how will they affect the organization and its passengers? <http://www.todaysengineer.org/aug03/tech-security.asp>

Also in this issue:

"Engineering Heritage: Magnetic-Core Memory Hits 50-Year Mark"

"World Bytes: The World's Children"

"Capitol Shavings: Tough Times for Pensions"

To read the new issue, visit: <http://www.todaysengineer.org>

IEEE EAB SEEKS INDUSTRY PROFESSIONALS TO SERVE AS PROGRAM EVALUATORS FOR ACCREDITATION ACTIVITIES

The IEEE Educational Activities Board (EAB) seeks professionals in industry, government and academic sectors to serve as program evaluators for the following Accreditation Board for Engineering and Technology Inc.-accredited programs at U.S. colleges:

- o Biomedical Engineering and Biomedical Engineering Technology
- o Computer Engineering and Computer Engineering Technology
- o Electrical Engineering and Electrical and Electronic Engineering Technology
- o Software Engineering and Software Engineering Technology
- o Electromechanical Engineering Technology
- o Information Engineering Technology
- o Laser-Optics Engineering Technology
- o Telecommunications Engineering Technology

Applications for the 2004-2005 academic year are due by Nov 15. They will be reviewed during the January/February IEEE meetings. Notification will be sent to applicants by March 1.

Service as a program evaluator gives members of the profession an opportunity to contribute to the achievement of high quality educational standards of engineering and engineering technology programs. Nomination and application forms for people interested in engineering are available at: <http://www.ieee.org/organizations/eab/apc/ceaa/eacinfo.htm>; forms for those interested in engineering technology are at <http://www.ieee.org/organizations/eab/apc/ctaa/tacinfo.htm>.

For more information, contact Carolyn Solimine at 1-732-562-5484 or c.solimine@ieee.org or eab-accred@ieee.org.

IEEE EAB INTERNATIONAL ACCREDITATION NEWS

To continue the advancement of international accreditation activities, the IEEE Educational Activities Board is sponsoring a workshop on Engineering Educational Program Accreditation. The workshop is entitled, Engineering Accreditation Around the World, and is scheduled for September 28-29, 2003, in Espoo, Finland. The EAB Committee on Global Accreditation Activities (CGAA) will conduct the workshop. An update about this workshop will be posted to the EAB Accreditation web pages at <http://www.ieee.org/organizations/eab/apc/overview.htm>.

STUDENT TEAM MENTORS NEEDED FOR VINNY AWARD COMPETITION

We need your help to act as a mentor for a team of students. Teams will combine skills in research, writing and creativity. Share the wealth of your experience with young learners. Named after Leonardo da Vinci, the VINNY is an award for the best one-minute videos (segmented by age levels) explaining how science, technology, engineering, and mathematics can help solve common global problems. Help shape the future. Sign up to be a mentor by October 31, 2003 at <http://vinny.pcs.cnu.edu>. The VINNY award is sponsored by the NASA Center for Distance Learning, Christopher Newport University, and IEEE. Funding is provided by the IEEE Foundation.

IEEE WORKSHOP: CONNECTING WITH THE PRE-UNIVERSITY COMMUNITY

Sponsored by The IEEE Foundation, IEEE Life Members Committee, IEEE Region 8, this workshop will take place on September 26-28, 2003 in Nice, France. Workshop goals include:

- 1) Empower Region 8 Section “champions” to develop collaborations with their local pre-university community to promote applied inquiry-based learning.
- 2) Enhance the level of technological literacy of pre-university educators.
- 3) Encourage pre-university students to pursue technical careers, including engineering.
- 4) Increase the general level of technological literacy of students for many years.

Who should attend: IEEE volunteers who are interested in engineering education and who want to share experience and practice from their region and who want to learn from others in the same situation.

What will it cost: The workshop is limited to around 35 people. Sections that send an attendee are asked to make a contribution of \$100 from their Section funds to support the workshop. All other costs (travel, meals and accommodation will be covered for by sponsor funding).

Contacts for more information: Doug Gorham, IEEE Pre-college Education manager (D.G.Gorham@ieee.org) or Simon Jones, R8 Educational Activities (s.r.jones@bath.ac.uk).

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